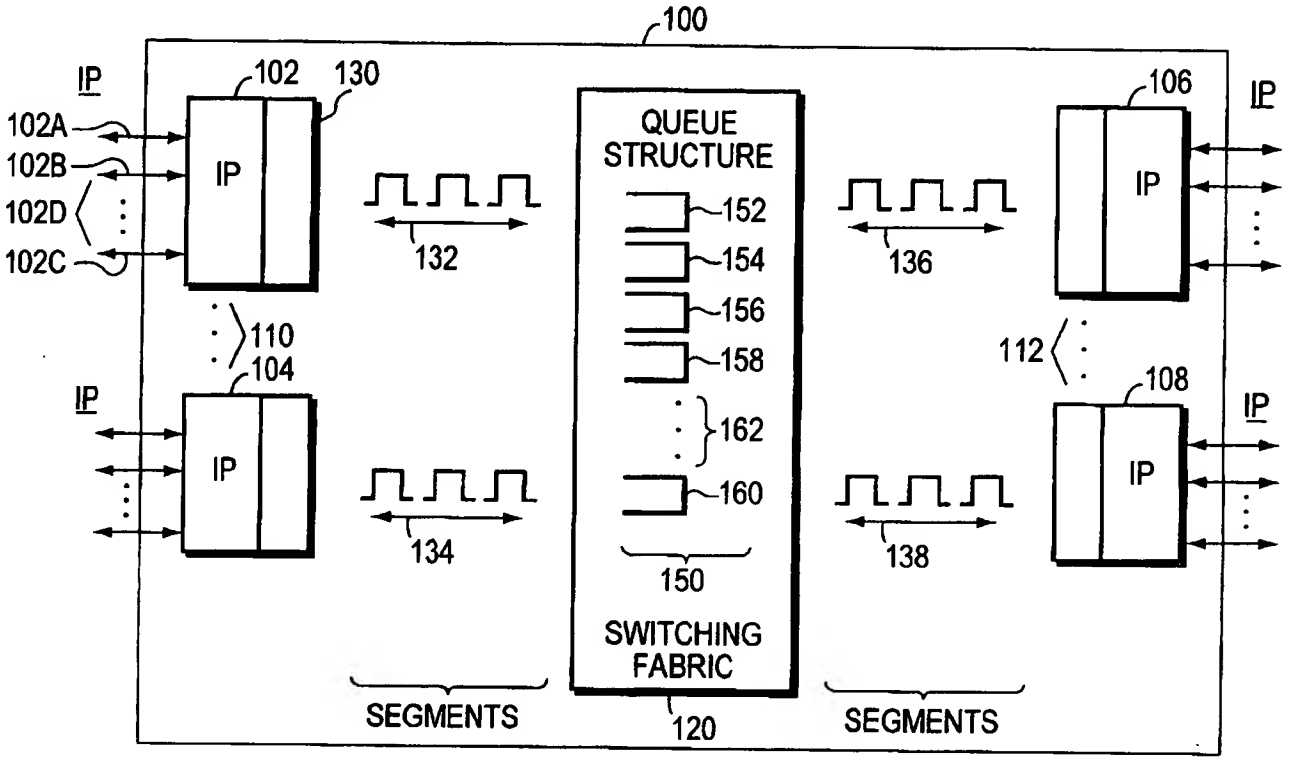


SWITCH WITH LINECARDS QUEUES, AND THRESHOLDS

FIG. 1

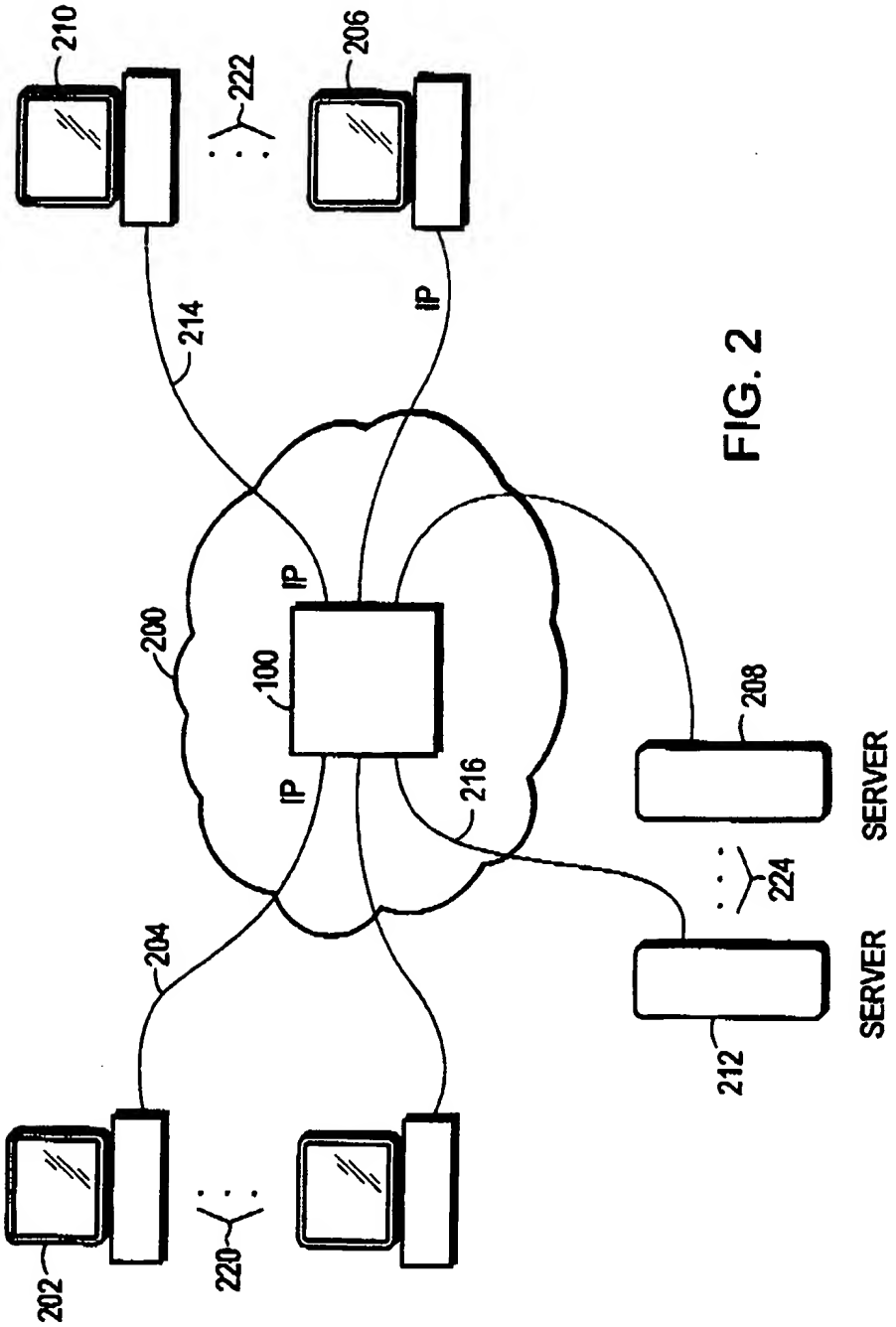

210
222
206
214
IP
IP
200
100
IP
216
208
SERVER
SERVER
224
204
212
202
220

FIG. 2

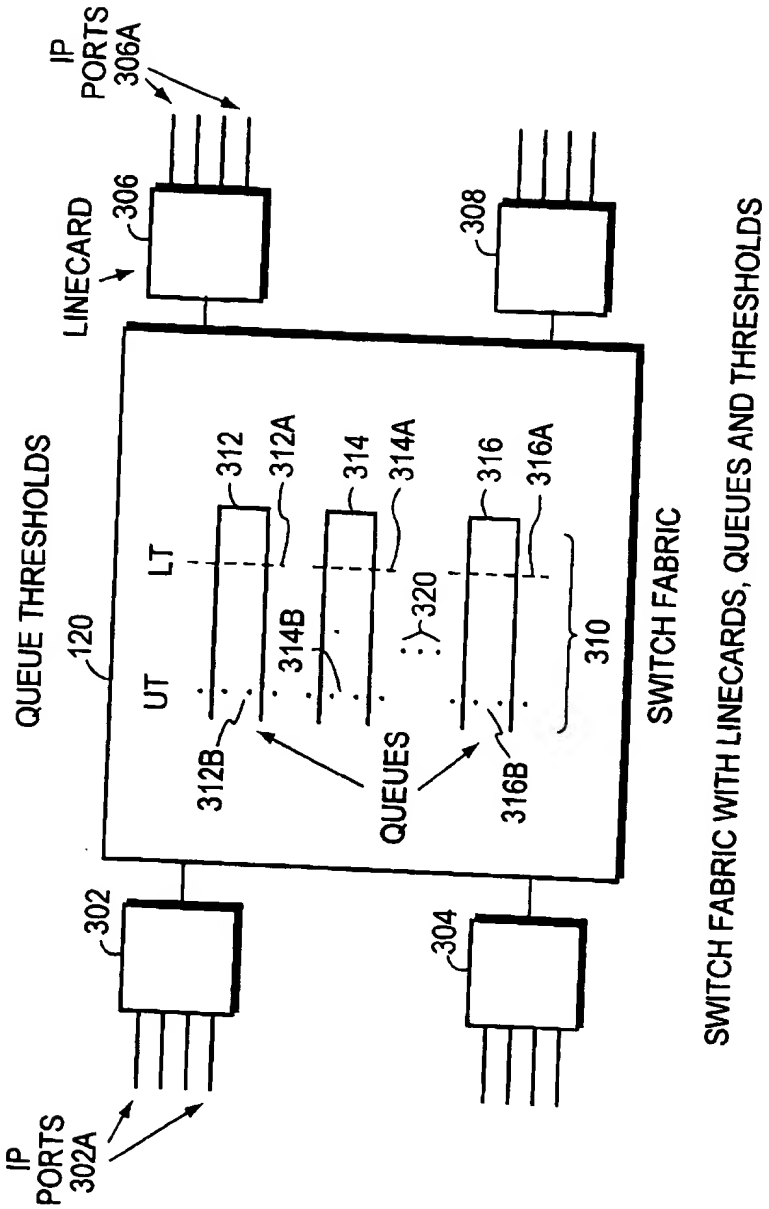
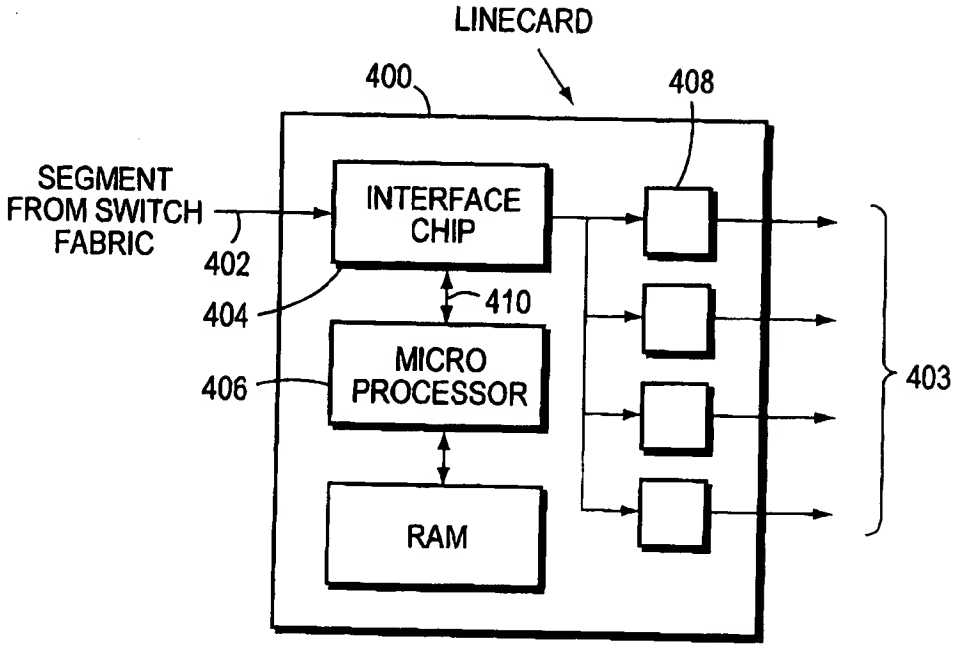

IP PORTS 306A
LINECARD
306
308
QUEUE THRESHOLDS
120
UT
LT
312
312A
314
314A
316
316A
320
314B
310
312B
QUEUES
316B
SWITCH FABRIC
302
304
IP PORTS 302A
SWITCH FABRIC WITH LINECARDS, QUEUES AND THRESHOLDS

FIG. 3



LINECARD WITH MICRO-PROCESSOR FOR EXECUTING RED ALGORITHM, RAM MEMORY FOR STORING CODE AND DATA

FIG. 4

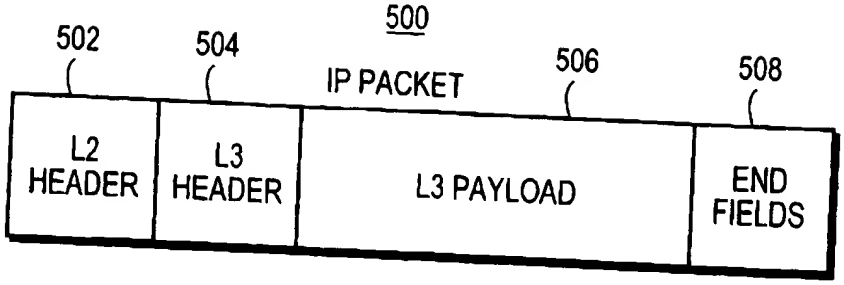


FIG. 5

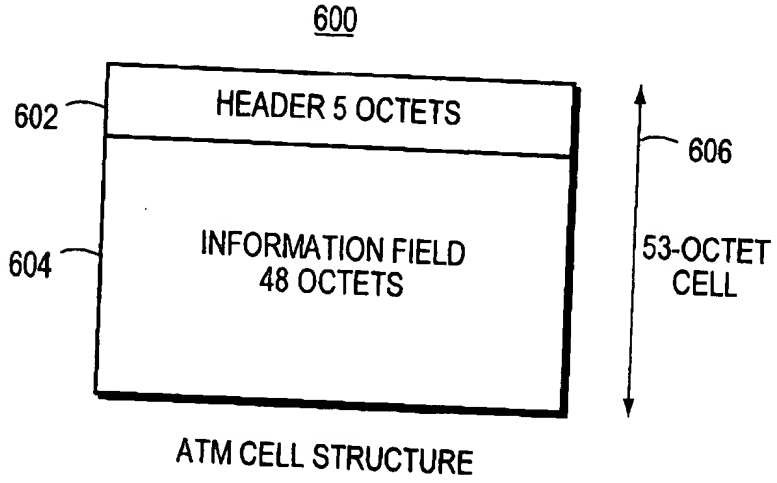


FIG. 6

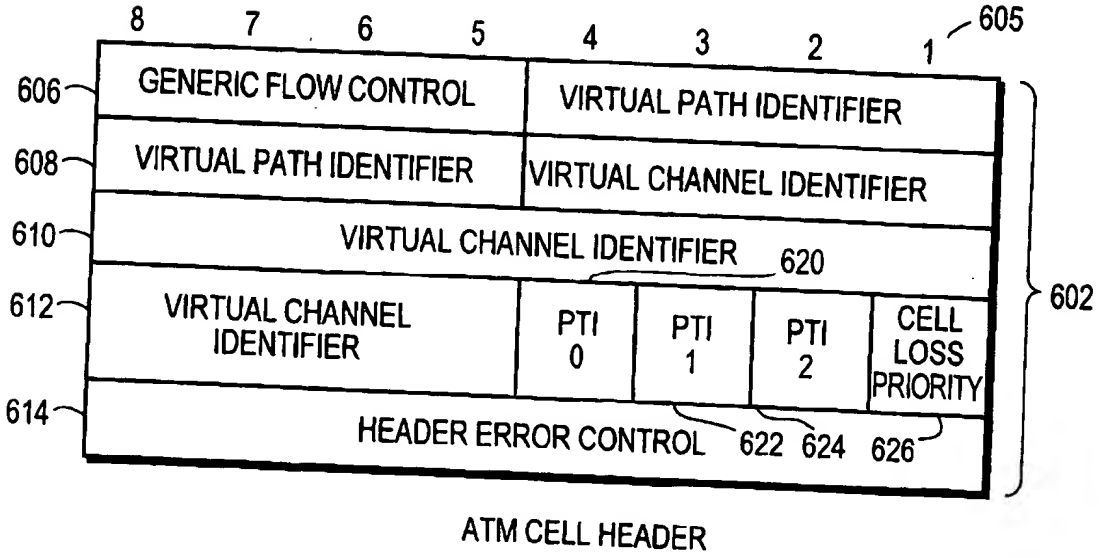


FIG. 7

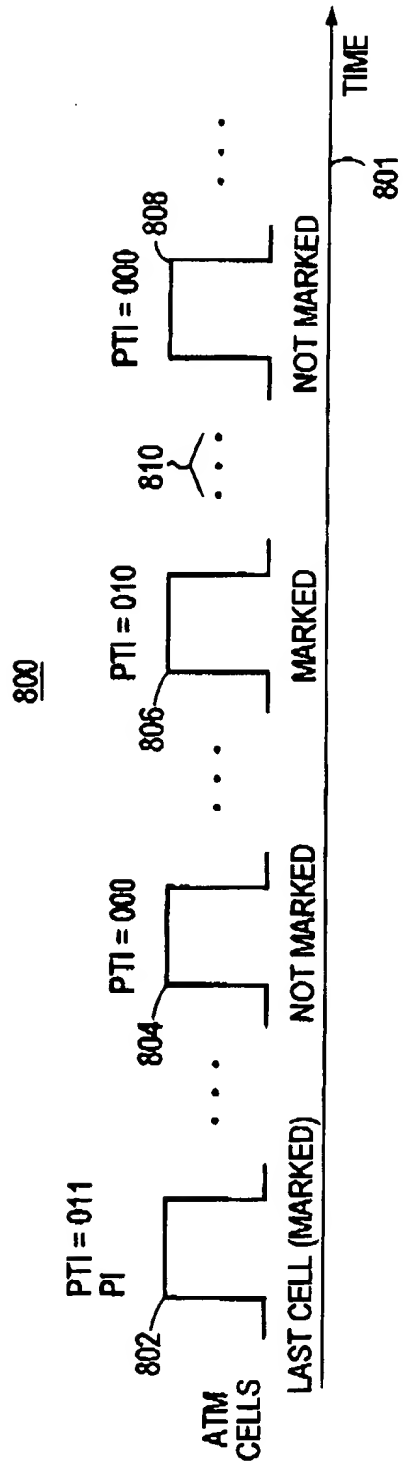

800
ATM CELLS
802
PTI = 011
PI
804
PTI = 000
NOT MARKED
806
PTI = 010
MARKED
810
808
PTI = 000
NOT MARKED
LAST CELL (MARKED)
801
TIME

FIG. 8

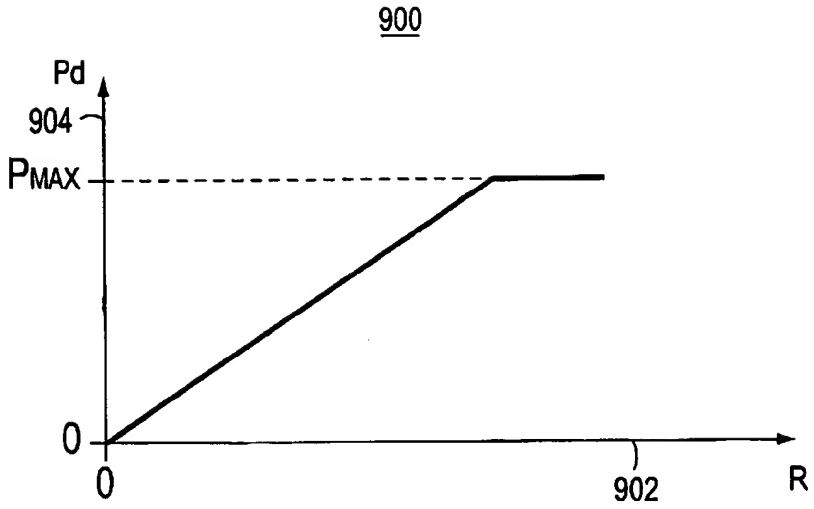
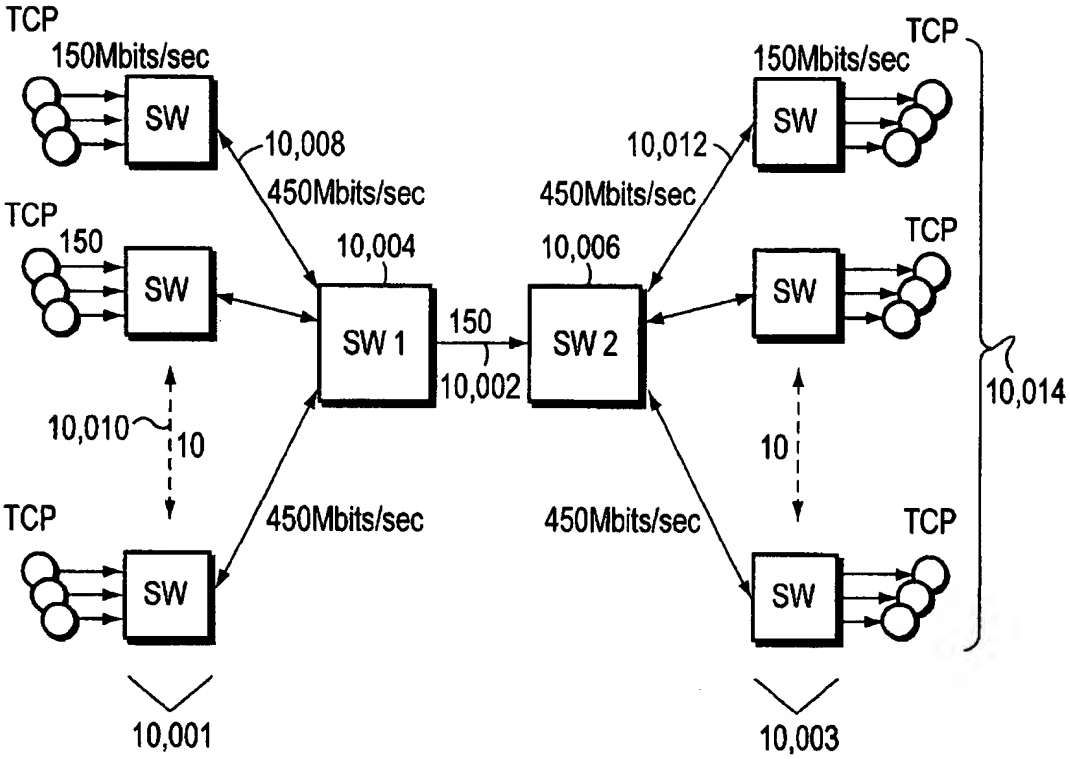


FIG. 9



TOPOLOGY FOR RED SIMULATIONS

FIG. 10

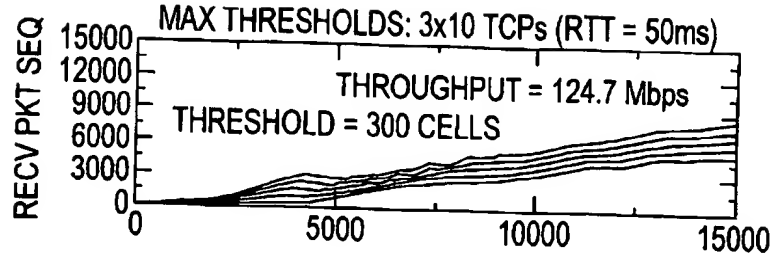


FIG. 11A

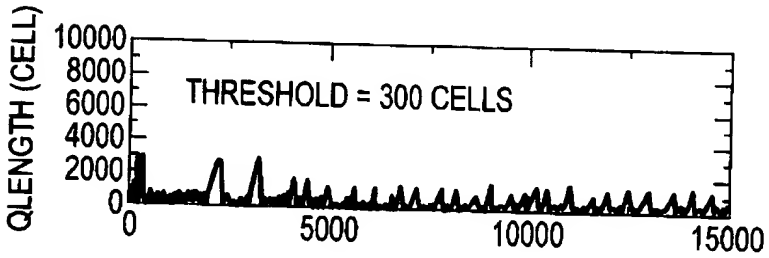


FIG. 11B

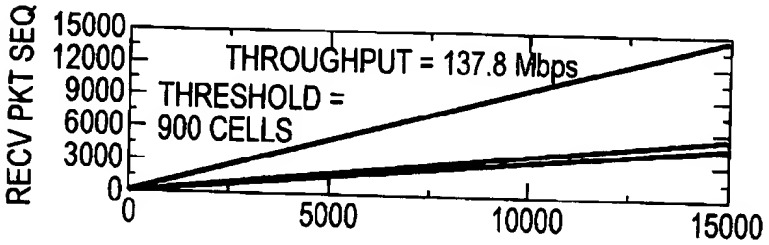


FIG. 11C

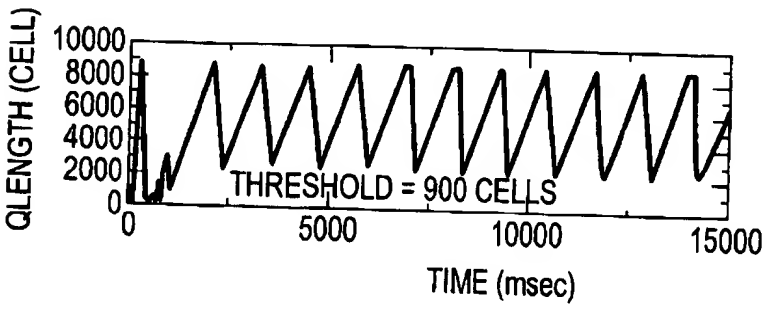


FIG. 11D

RESULTS FOR EPD-THRESHOLD = 300, 900

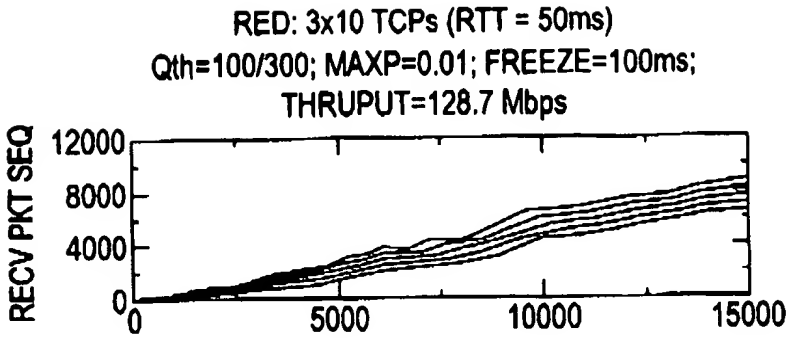


FIG. 12A

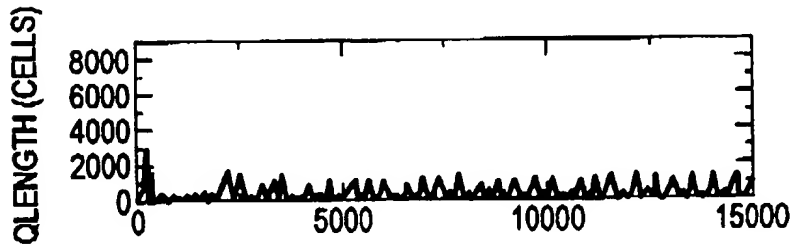


FIG. 12B

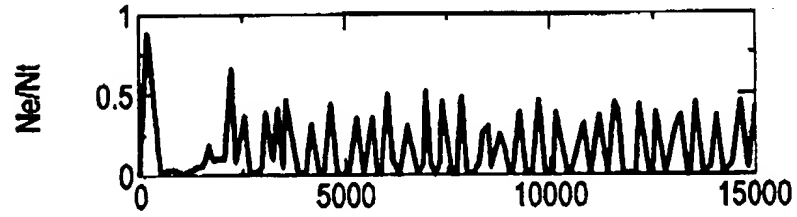


FIG. 12C

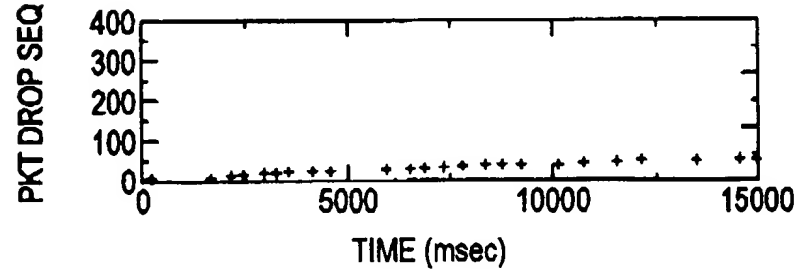


FIG. 12D

RESULTS FOR EFCI-THRESHOLD = 100,
EPD = 300

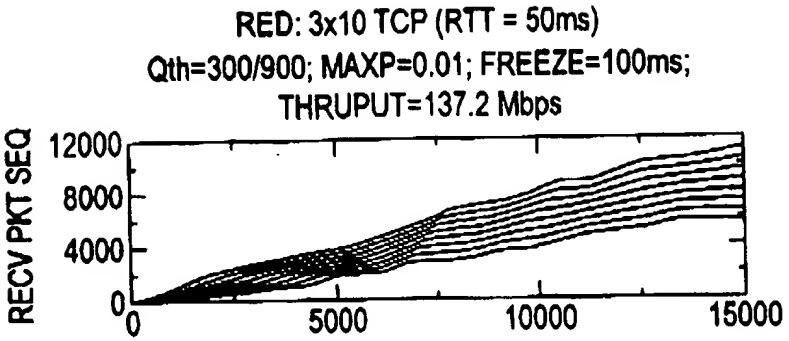


FIG. 13A

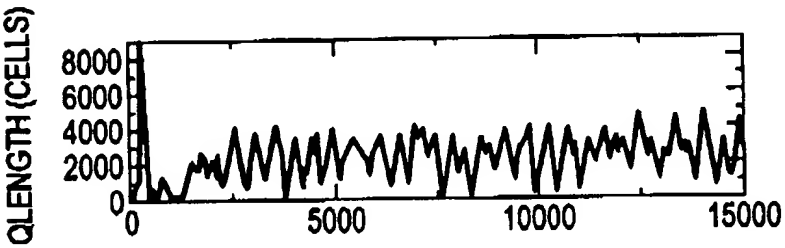


FIG. 13B

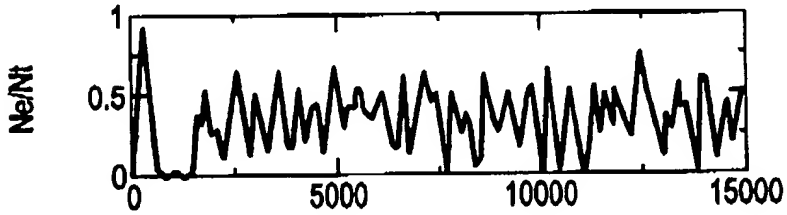


FIG. 13C

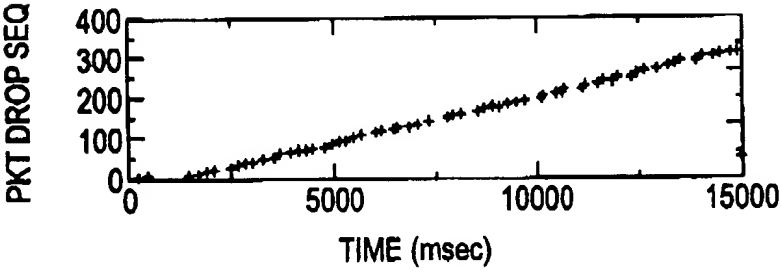


FIG. 13D

RESULTS FOR EFCI-THRESHOLD = 300,
EPD = 900

RED: 3x10 TCP (RTT = 50ms)
Qth=300/900; MAXP=0.01; FREEZE=200ms;
THRUPUT=137.3 Mbps

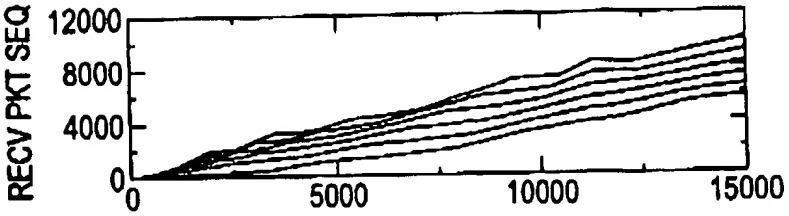


FIG. 14A

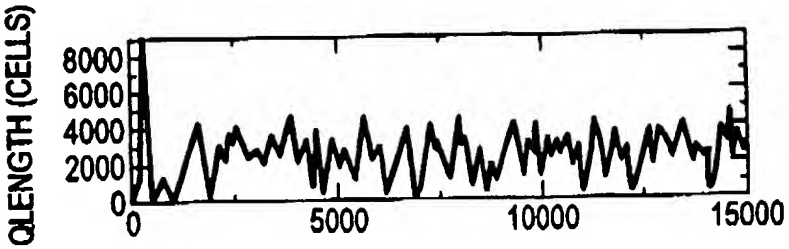


FIG. 14B

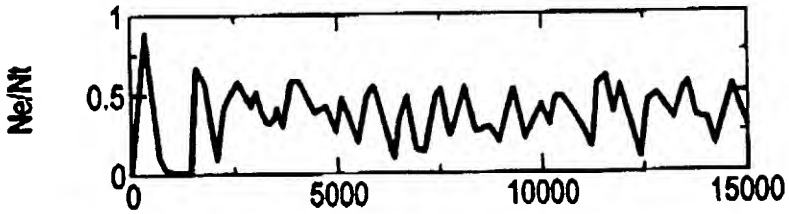


FIG. 14C

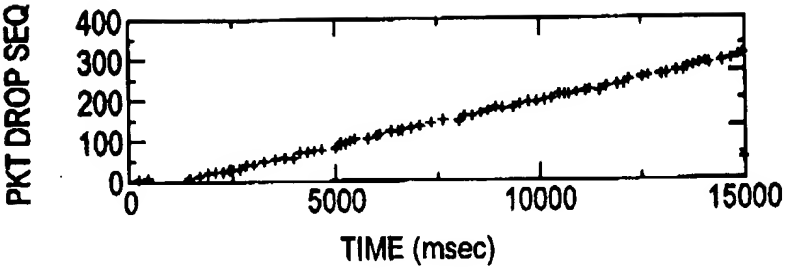


FIG. 14D

RESULTS FOR PD UPDATE INTERVAL = 200 msec

RED: 10/20 (Hi/Lo) TCPs (RTT = 50ms)
PER-CLASS VS. PER-CLASS PER-PREF RATIOS; MAXP=1.0/2.0%

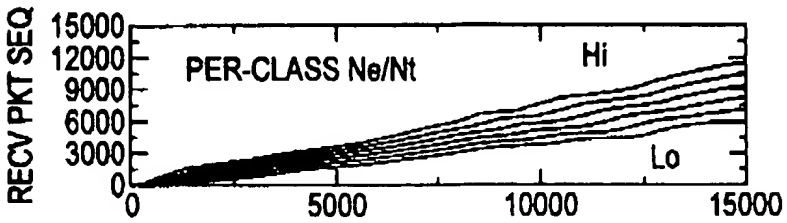


FIG. 15A

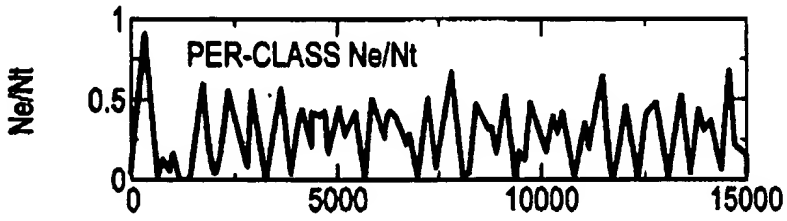


FIG. 15B

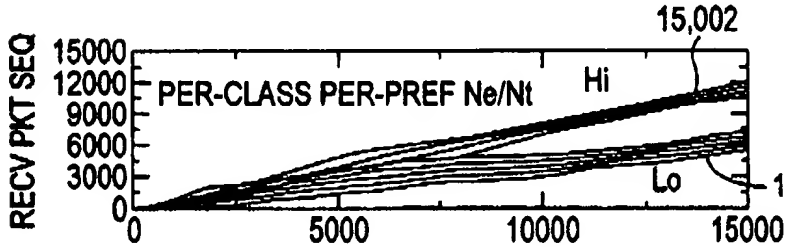


FIG. 15C

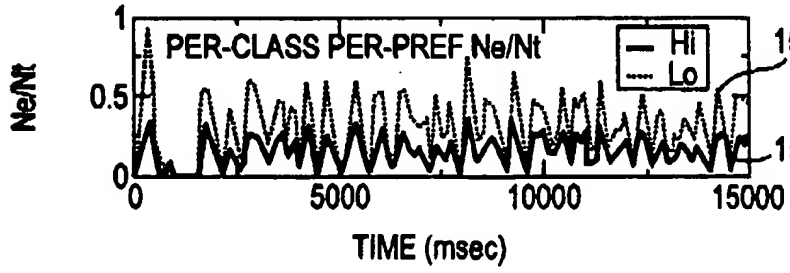


FIG. 15D

PER-CLASS VS. PER-CLASS PER-PREFERENCE Ne/Nt